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UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
### INSTITUTE OF EDUCATION

FIVE-SEMESTER BACHELOR OF EDUCATION (SANDWICH) PROGRAMME
LEVEL 400, END-OF-FIRST SEMESTER EXAMINATION, JANUARY 2024

9TH JANUARY 2024   SECONDARY SCHOOL MATHEMATICS   1:30 PM -3:00 PM
CURRICULUM

SECTION B
(40 MARKS)

Answer any TWO questions from this Section.
Please, note that if you answer more than two questions, only the first two will be marked.

1.

a. Explain the term *genetic principle* in relation to the approach of sequencing the subject matter in mathematics curriculum.   4 marks

b. Distinguish between *vertical* and *horizontal* sequencing of subject matter in mathematics.   6 marks

c. Describe **one** activity you would take SHS 1 students through for them to generalise that any number, excluding zero exponent zero is one (example, $5^0 = 1, 3^0 = 1, 100^0 = 1, a^0 = 1, a \neq 0$).   10 marks

2.

a. State the philosophy of teaching mathematics to Ghanaian students.   4 marks

b. In this activity, your aim is to support the students in SHS 2 to establish the concept that *the angle at the centre of a circle is twice as big as the angle at the circumference made by the same arc or chord.*
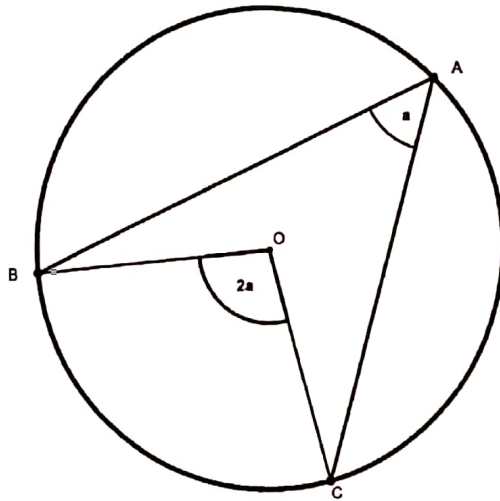
i. State **one** related previous knowledge you expect your students to have in order to introduce this concept to them. 3 marks

ii. Describe **one** activity you would use to assist your students to deduce that the angle at the centre is twice as big as the angle at the circumference made by the same arc or chord. 5 marks

c. A Mathematics student calculates his chances of passing the next test according to the results on earlier test. If he passed the last test, he thinks his chances are 0.7 of passing the next test. If he failed the last test, he estimates that the probability of passing the next test is 0.5. find the probability that on the next two test the student will:

i. Pass both 4 marks

ii. Pass the first but not the second. 4 marks

3.

a. Explain the difference between mathematical error and misconception. 4 marks

b. Josephine is an SHS 1 student. She performs the tasks below follows: Identify and explain the most root causes of her error and misconception.

i. $(a + b)^2 = a^2 + b^2$ 4 marks

ii. $3x + 5 = 8x$ 4 marks

c. The cost (C) of producing a sewing machine component is partly constant and partly varies inversely with the number of components (n) produced per day. If 30 components are produced per day, the unit cost is $6. If 50 components are produced per day, the unit cost is reduced to $4 per component.

i. Write the algebraic equation connecting C and n. 4 marks

ii. What is the cost of each component if 150 are produced per day? 2 marks

iii. How many components are produced in a day when the unit cost rises $7. 2 marks